

CLAIMS

1. An optical fiber preform elongation process, comprising:

5 - heating the preform so as to soften one region thereof;

 - elongating the preform by submitting the preform to a traction;

 - determining, during the step of elongating, the
10 preform diameter in at least one measuring point along the preform; and

 - controlling the step of elongating on the basis of the determined diameter;

 characterized in that it further comprises

15 - measuring, during the step of elongating, at least a geometrical parameter of the preform; and

 - controlling, during the step of elongating, the position of said diameter measuring point according to the measured geometrical parameter.

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2. A process according to claim 1, wherein measuring at least a geometrical parameter of the preform comprises determining the profile of at least a portion of the softened region.

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3. A process according to claim 2, wherein measuring at least a geometrical parameter of the preform comprises detecting, from said determined profile, at least one among a softened region starting point and a softened region final
30 point, and wherein controlling the position of said measuring point comprises choosing a diameter measuring point located at a predetermined distance from one among the softened region starting point and the softened region final

point.

4. A process according to claim 3, wherein measuring at least a geometrical parameter of the preform further
5 comprises detecting, from said determined profile, the length of the softened region, and wherein said predetermined distance is a predetermined percentage of said length.

10 5. A process according to claim 2, wherein determining the profile comprises detecting a predetermined number of points along the profile of the preform and interpolating said points.

15 6. A process according to claim 2, wherein determining the profile comprises capturing a digital image of the at least a portion of the softened region.

20 7. A process according to claim 1, wherein controlling the step of elongating comprises comparing the determined diameter with a target diameter.

25 8. A process according to claim 1, wherein heating the preform comprises feeding the preform to a furnace at a first speed, and submitting the preform to a traction comprises pulling the preform out of the furnace at a second speed; and wherein controlling the step of elongating comprises controlling at least one among the first speed and the second speed.

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9. A process according to claim 1, wherein heating the preform comprises exposing the preform to a heater movable along a preform axis at a first speed, and applying a

traction comprises pulling at least one end of the preform at a second speed, and wherein controlling the step of elongating comprises controlling at least one among the first speed and the second speed.

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10. An optical fiber preform elongation process, comprising:

- heating the preform so as to soften one region thereof;
 - 10 - elongating the preform by submitting the preform to a traction;
 - determining at least a geometrical parameter of the preform; and
 - controlling the step of elongating on the basis of
15 the detected geometrical parameter;
- characterized in that determining at least a geometrical parameter comprises detecting the profile of at least a portion of the softened region.

20 11. A process according to claim 10, wherein detecting the profile comprises detecting a predetermined number of points along the profile of the preform and interpolating said points.

25 12. A process according to claim 10, wherein detecting the profile comprises capturing a digital image of the at least a portion of the softened region.

30 13. A process according to claim 10, wherein determining at least a geometrical parameter further comprises determining the preform diameter in a measuring point of the softened region and wherein controlling the step of elongating comprises comparing the determined

diameter with a target diameter.

14. A process according to claim 10, wherein determining the preform diameter comprises controlling the position of the measuring point according to said detected profile.

15 15. A process according to claim 13, further comprising controlling the target diameter according to said detected profile.

16. A process according to claim 13, wherein the preform diameter is determined from said detected profile.

15 17. A process according to claim 14, wherein determining at least a geometrical parameter comprises determining, from said detected profile, at least one among a softened region starting point and a softened region final point, and wherein controlling the position of the measuring point comprises choosing a measuring point located at a predetermined distance from one among the softened region starting point and the softened region final point.

25 18. A process according to claim 17, wherein measuring at least a geometrical parameter of the preform further comprises detecting, from said determined profile, the length of the softened region, and wherein said predetermined distance is a predetermined percentage of said length.

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19. A process for manufacturing an optical fiber, comprising producing a glass preform and drawing the glass preform into an optical fiber, wherein producing a glass

preform comprises the steps of:

- heating an intermediate preform so as to soften one region thereof;
 - elongating the intermediate preform by submitting
5 the intermediate preform to a traction;
 - detecting, during the step of elongating, the preform diameter in at least one measuring point along the intermediate preform; and
 - controlling the step of elongating on the basis of
10 the detected diameter;
- characterized in that it further comprises
- measuring, during the step of elongating, at least a geometrical parameter of the preform; and
 - varying, during the step of elongating, said
15 measuring point according to the measured geometrical parameter.

20. An apparatus for elongating an optical fiber preform, comprising:

- 20 - a monitoring device (115, 117) for obtaining information on geometrical parameters of the preform being elongated; and
 - a control device (119) for controlling elongation process parameters using the preform geometrical parameters
25 information,
- characterized in that the monitoring device comprises
- an image capturing device (115, 117) for obtaining a profile (303) of at least a portion of a softened region (109d) of the preform (109);
 - 30 - a processing device (119) for analysing the profile for extracting information on the preform geometrical parameters.